



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,297	08/26/2003	Hyun Huh	47881-000003/US	2580
30593	7590	05/09/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			VO, HAI	
P.O. BOX 8910			ART UNIT	
RESTON, VA 20195			PAPER NUMBER	

1771

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,297

Applicant(s)

HUH ET AL.

Examiner

Hai Vo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 17-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0102.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1771

(column 7, lines 4-6). The liquid microelement contains mineral oil, which is chemically incompatible with polyurethane matrix, which a hydrophilic matrix material (column 7, lines 9-11, 50-55; and column 8, lines 63-65). The liquid microelements are present in an amount of 45 to 95% by weight (column 7, lines 5-10). It appears that the polishing layer is made from a hydrophilic urethane matrix and liquid microelements embedded in the urethane matrix. Therefore, it is not seen that the polishing layer could not have been a semitransparent as the same materials are employed. Accordingly, Miller anticipates or strongly suggests the claimed subject matter.

5. Claims 4-6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5,876,266) as applied to claim 1 above, in view of James et al (US 6,069,080). Miller does not teach the polishing pad wherein the hydrophilic urethane matrix comprising a hydrophilic compound such as polyethylene glycol. James, however, teaches a polishing pad for use in the manufacture of semiconductor devices comprising a urethane matrix material that includes polyethylene glycol with a molecular weight of 200-10000 and present in an amount of 20 to 60% by weight of the matrix material (column 5, lines 50-55; and column 9, lines 1-5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add polyethylene glycol in the urethane matrix material motivated by the desire to lower the modulus of the material, thereby making the phase more to wear, to dissolving or to otherwise diminishing during polishing.

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-16 in the reply filed on 02/10/2006 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 9-14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Miller et al (US 5,876,266).

Miller discloses a polishing pad comprising a polishing layer composed of a polymeric matrix and liquid microelements embedded in the polymeric matrix

(column 9, lines 20-25). Miller discloses the microelements interposed between the polished substrate surface and the polishing pad (column 4, lines 65-67). Likewise,

it is clearly apparent that the open pores defined by the embedded liquid

microelements are inherently distributed across a surface of the polishing layer. The

liquid microelements are spherical with an average diameter of 0.01 to 1000 microns

Art Unit: 1771

Miller does not specifically teach the polishing pad having a flow channel on the surface. James discloses the polishing pad having a flow channel on the surface (column 13, lines 20-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a structure having a flow channel on the surface of the polishing layer motivated by the desire to facilitate removal of dross during polishing and enhance the polishing action by exposing a greater number of microelements.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5,876,266) as applied to claim 1 above, in view of Merchant et al (US 6,364,744). Miller does not teach the polishing pad comprising a transparent support layer which has a seamless interface with the polishing layer. Merchant, however, teaches a chemical mechanical polishing system comprising a support layer 25' and a polishing layer 24' attached to a top surface of the support layer as shown in figure 4. Merchant discloses the polishing layer and the support layer being transparent (column 3, lines 48-50). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the transparent support layer motivated by the desire facilitate the light transmission through the polishing layer, thereby enhancing the photocatalytic process for breaking down water into hydrogen and oxygen in the presence of light. As a result, the released oxygen significantly enhances the oxidation of the metal surface during CMP.

Neither Miller nor Merchant teaches the support having a seamless interface with the polishing layer. However, it would have been obvious to one of skill in the art to make the polishing layer and the support layer integral, motivated by the expectation of preventing the accumulation of air bubbles in the interface region between the two layers, thereby enhancing the polishing performance by *Howard v. Detroit Store Works*, 150 US 164 (1893) where it was held that forming in one piece an article formerly that has been formed in two pieces involves only routine skill in the art. Note also *in re Larson*, 144 USPQ 347.

7. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al (US 5,876,266) as applied to claim 1 above, in view of Reinhardt et al (US 5,578,362). Miller does not specifically teach a polishing pad comprising hollow polymeric microelements embedded in the polymeric matrix and open pores defined by the hollow polymeric microelements are also distributed across the surface of the polishing layer. Reinhardt, however, teaches a polymeric polishing pad comprising hollow polymeric microelements embedded in the polymeric matrix and open pores defined by the hollow polymeric microelements are also distributed across the surface of the polishing layer as shown in figure 3. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to embed the hollow polymeric microelements in the polymeric matrix motivated by the desire to reduce the effective rigidity of the surrounding portion of the polymeric matrix, thereby providing at least two levels of hardness in the polishing pad, i.e., the

Art Unit: 1771

work surface being softer than the subsurface (see Reinhardt, column 6, line 65 et seq.).

Miller does not specifically teach the polishing pad having a flow channel on the surface. Reinhard discloses the polishing pad having a flow channel on the surface as shown in figures 7 and 8. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form a structure having a flow channel on the surface of the polishing layer motivated by the desire to facilitate removal of dross during polishing and enhance the polishing action by exposing a greater number of microelements (see Reinhardt, column 8, lines 65-67).

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1771

9. Claims 1-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of U.S. Patent No. 7,029,747.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the '747 patent fully encompasses the claimed subject matter.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HV

Hai Vo

**HAIVO
PRIMARY EXAMINER**